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Original Article

Pathology Section

Histopathological Study of Eyelid Lesions

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ABSTRACT

Introduction: Eyelids are the shields of human eye which protect from injury. When eyelids do not function properly, they irritate the eyes and lead to visual problems. Varying lesions affecting the eyelids are encountered which can be divided into congenital, inflammatory, cystic, benign and malignant.

Aim: This study was done to know the proportion and study the morphology of eyelid lesions in a tertiary care hospital. Also to discern the rate of benign versus malignant eyelid lesions and correlate results with other similar studies.

Materials and Methods: This observational and descriptive study was carried out in the Pathology Department of a Tertiary Care Hospital. Statistical analysis of histopathological reports of surgical specimens of eyelid lesions obtained from patients was done on the basis of various parameters like age, sex, location and histopathology type. These findings were analysed using various statistical methods and compared with findings of other authors to derive relevant conclusion.

Results: The highest incidence of eyelid lesions was observed in the age group of 31-40 years (17.39%) and the lowest incidence of eyelid lesions was in the age group more than 80 years (0.86%). Males were found to be more affected than females (57.82% Vs 42.18%). Right upper eyelid (40%) was the most commonly involved. Benign lesions were common in children and young adults whereas malignant lesions were common after 60 years of age. Benign lesions were more common than malignant lesions in eyelid. Amongst the benign eyelid lesions, prevalence of nevus (12.17%) was the highest followed by epidermal cyst (11.30%), dermoid cyst (9.56%) and haemangioma (8.26%). Amongst the malignant eyelid lesions, prevalence of Squamous Cell Carcinoma (SCC) (10.43%) was the highest followed by sebaceous cell carcinoma (9.13%) and Basal Cell Carcinoma (BCC) (8.25%).

Conclusion: The epidemiology of eyelid lesions in this study population was different from populations in other similar studies. Benign lesions were more common than malignant lesions in eyelid. Nevus was the most common benign lesion and SCC was the most common malignant lesion in this study.

Keywords: Epidermal cyst, Nevus, Squamous cell carcinoma

INTRODUCTION

Eyelid lesions are numerous due to the presence of skin, appendages, muscle, modified glands, and conjunctival mucous membrane in the eyelid [1].

They can be divided into congenital, inflammatory, cystic, benign and malignant. Recognition and diagnosis of these problems are crucial to their proper management [2]. The relative frequencies of different benign and malignant eyelid lesions are variable in different geographical locations in the world and are widely reported in the literature. Several pathologic processes involving the eyelids are treated by the ophthalmologist, and a high percentage of surgically excised ophthalmic specimens submitted for histopathologic evaluation are obtained from this site [3]. According to the epidemiology of various eyelid lesions in our location we can improve the availability of appropriate treatment strategies in our hospital.

MATERIALS AND METHODS

This observational and descriptive study was conducted in a tertiary care hospital in Ahmedabad from March 2008 to April 2014. The reports of patients having eyelid lesions and who gave consent for research purpose use were included in the study. Patients with ophthalmic lesions other than eyelid lesions were excluded from the study.

Total 230 histopathological reports of surgical specimens of eyelid lesions obtained from patients admitted in the hospital were analysed. For retrospective cases blocks, slides and reports were retrieved and reviewed. For prospective cases histopathology of the lesions was studied. A detailed history of each patient regarding age, chief complaints and other relevant findings was taken. Slides stained with Hematoxylin and Eosin stain were examined microscopically for detailed histopathological findings and final diagnosis was given. Special stains such as PAS stain were used whenever

required. These findings were analysed and compared with findings of other studies.

The consent from all the patients was taken before using their slides for research purpose. The ethical approval from Institutional Ethics Committee was taken prior to the study.

STATISTICAL ANALYSIS

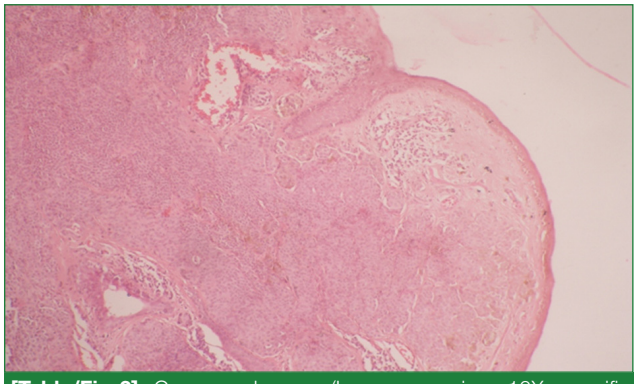
Simple statistical methods such as bar charts were used for descriptive purpose. Stratified analysis was done using IBM SPSS statistics version 25.0 software. Chi-Square test is used to determine significance between parameters observed in this study with the similar study of other authors. The p-value <0.05 was accepted as significant.

RESULTS

A total 230 cases of the different eyelid lesions were analysed, the highest prevalence of eyelid lesions i.e., 40 (17.39%) was observed in the age group of 31-40 years, which was followed by 38 (16.52%) eyelid lesions in 21-30 years of age group. The lowest prevalence of eyelid lesions i.e., 2 (0.86%) was in the age group more than 80 years. Males were found to be more affected than females (57.82% vs. 42.18%). In females, the highest prevalence (7.39%) was observed in the age group 31-40 years, while in males, it was in the age group of 21-40 years (10%) [Table/Fig-1].

Sr. no.	Age Group (Year)	Male	Prevelance (%)	Female	Prevelance (%)
01	≤10	5	2.17	6	2.6
02	11-20	21	9.13	15	6.52
03	21-30	23	10	15	6.52
04	31-40	23	10	17	7.39
05	41-50	12	5.21	12	5.21
06	51-60	21	9.1	14	6.08
07	61-70	19	8.26	13	5.65
08	71-80	7	3.04	5	2.17
09	>80	2	0.86	0	0
Total		133	57.82	97	42.18

[Table/Fig-1]: Prevalence of eyelid lesions according to age and sex.

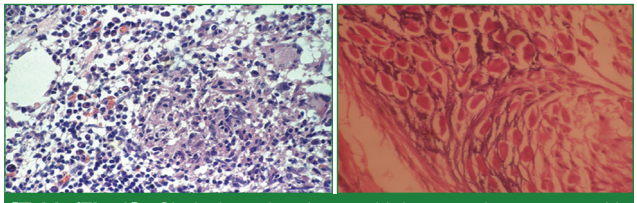


[Table/Fig-2]: Compound nevus (Low power view: 10X magnification, H&E Stain).

Eyelid lesions were more common in upper eyelids (65.65%) as compared to the lower eyelids (34.35%). Right upper eyelid (40%) was the most commonly involved and right lower eyelid (13.47%) was the least commonly involved location.

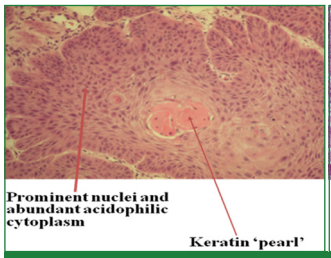
It is observed from this study that benign lesions were more common than malignant lesions in eyelid. Benign lesions were common in children and adults, whereas malignant lesions were common after 60 years of age.

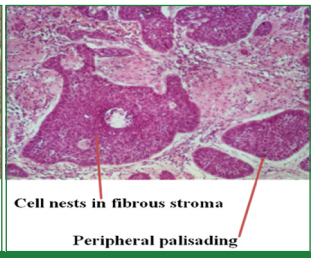
Many benign and malignant eyelid lesions were identified. Epidermal cysts were lined by squamous epithelium and containing accumulations of keratin. Dermoid cysts contained masses of keratin surrounded by a layer of squamous epithelium, along with adnexal structures, such as sweat and sebaceous glands and hair follicles. Various sections revealed proliferation of capillary channels and endothelial cells forming lobular architecture suggestive of capillary haemangioma. Many biopsy sections showed melanocytic proliferation at the dermo-epidermal junction and extending into the epidermal and dermal tissue along with epithelial hyperplasia which were consistent with the diagnosis of compound nevus [Table/Fig-2]. Various sections studied showed fibroconnective tissue with multiple granulomas comprising of epitheloid cells, Langhan's and foreign body type of giant cells with lymphoplasmacytic cells and polymorphs. In the centre of granulomas, empty spaces reminiscent of fatty spaces were seen which were suggestive of chalazion [Table/Fig-3]. Sections showing lobules of acanthotic epithelium surrounding the characteristic intracytoplasmic inclusion bodies (molluscum bodies) were diagnosed as infected with molluscum contagiosum [Table/Fig-4] [3].



[Table/Fig-3]: Chalazion showing multiple, round spaces with surrounding granulomatous inflammation. (High power view: 40X magnification, H&E Stain). **[Table/Fig-4]:** Molluscum contagiosum (High power view: 40X magnification, H&E Stain).

Sections studied from various biopsies showed tumour to be composed of nests of squamous neoplastic cells having pleomorphic, hyperchromatic and vesicular nuclei. Prominent nucleoli and mitoses were seen. Keratin pearls or keratinization was present. These findings were suggestive of SCC [Table/Fig-5]. Many other biopsy sections revealed epidermis with surface ulceration and tumour beneath composed of nests of basaloid cells having ovoid or spindly, dark nuclei and mitosis. Peripheral palisading was presented consistent with basal cell carcinoma [Table/Fig-6]. Several morphologic patterns of sebaceous carcinoma were recognised like distinct nests of neoplastic cells (lobular variant), tumour lobules with central necrosis (comedocarcinoma pattern), papillary pattern and combinations of many patterns (mixed pattern) [3].





[Table/Fig-5]: Squamous cell carcinoma (High power view: 40X magnification, H&E stain). **[Table/Fig-6]:** Basal cell carcinoma (High power view: 40X magnification, H&E stain).

In the category of benign eyelid lesions, prevalence of nevus 28 (12.17%) was the highest followed by epidermal cyst 26 (11.30%), dermoid cyst 22 (9.56%) and haemangioma 19 (8.26%). In the category of malignant eyelid lesions, prevalence of SCC 24 (10.43%) was the highest followed by sebaceous cell carcinoma 21 (9.13%) and BCC 19 (8.26%) [Table/Fig-7].

Out of 70, SCC comprised 24 (34.28%) of all the malignancies followed by sebaceous (meibomian) carcinoma 21 (30%) and BCC 19 (27.14%).

DISCUSSION

In the study of Paul S et al., [4] and Coroi MC et al., [5], the most affected age range was the sixth decade. Malignant lesions had higher prevalence than benign lesions unlike this study in which occurrence of benign lesions was more than malignant lesions [5]. This difference in the occurrence of benign and malignant eyelid lesions in present study and the study of Coroi MC et al., was found to be significant by applying Chi-square test [Table/Fig-8]. This would explain the higher age range in the study of Coroi MC et al., [5].

The findings of this study were similar to the findings of the study of Paul S et al., [4], and Coroi MC et al., [5], in which benign lesions were common before 60 years of age and malignant lesions occurred in and after the sixth decade.

Males were found to be more affected than females (57.82% vs. 42.18%) in this study just like the study of Coroi MC et al., [5], in which 54.9% were males and 45.1% were females. Contradictory to these findings, in the study of Paul S et al., females were more affected than males (53% vs. 47%)[4]. This difference in the occurrence of eyelid lesions in relation to sex in present study and the study of Paul S et al., was found to be significant by applying Chi-square test [Table/Fig-9].

Right upper eyelid (40%) was the most commonly involved and right lower eyelid (13.47%) was the least commonly involved in this study. In the study of Paul S et al., the most common site was the left upper eyelid [4], and as per Coroi MC et al., the majority of the tumours were located in the lower eyelids [5]. This may be because in our study SCC was more common than BCC unlike others in which BCC was more common than SCC. Occurrence of BCC is most common in lower lid [6] whereas, SCC is more common than BCC in upper lid [7].

[Table/Fig-10] shows that the results of the present study were similar to various other studies [4,8-10] in which benign lesions were more prevalent. However, in the study of Coroi MC et al., [5], malignant lesions were more common than benign lesions. [Table/Fig-11] compares the distribution of common eyelid lesions of various studies [4,5,8-12].

[Table/Fig-12] compares the frequencies of occurrence of eyelid malignancies in various studies [4,13]. In the present study, SCC was the commonest malignancy amongst

Sr. No.	Lesions	No. of Cases	(%)
Benign Lesions			
1	Haemangioma	19	8.26
2	Sebborheic Keratosis	4	1.73
3	Epidermal Cyst	26	11.3
4	Infections	5	2.15
	a) Oncocerciasis	1	
	b) Cysticercosis	1	
	c) Molluscum Contagiosum	2	
	d) Hydatid Cyst	1	
5	Dermoid Cyst	22	9.56
6	Granuloma Pyogenicum	13	5.65
7	Nevus	28	12.17
	a) Compound Nevus	14	
	b) Intradermal Nevus	12	
	c) Junctional Nevus	2	
8	Dermolipoma	9	3.91
9	Inverted Follicular Keratosis	1	0.43
10	Chalazion	6	2.60
11	Epidermal Inclusion Cyst	5	2.17
12	Wart	7	3.04
13	Inflammation	3	1.3
14	Eccrine Hidrocystoma	1	0.43
15	Choristoma	2	0.86
16	Neurofibromatosis	4	1.73
17	Schwannoma	1	0.43
18	Actinic Keratosis	1	0.43
19	Xanthelasma	2	0.86
20	Sudoriferous Cyst	1	0.43
Total		160	69.56
Malignant Lesions			
1	Basal Cell Carcinoma	19	8.26
2	Sebaceous Cell Carcinoma	21	9.13
3	Squamous Cell Carcinoma	24	10.43
4	Non Hodgkins Lymphoma	3	1.30
5	Malignant Melanoma	2	0.86
6	Spindle Cell Tumour	1	0.43
Total		70	30.43

[Table/Fig-7]: Distribution of different Eyelid lesions.

Studies	Benign	Malignant	Chi-square value	p-value	Level of significance (p<0.05)
Paul S et al., [4] [2011]	649	206	3.83	>0.05	Not significant
Coroi MC et al., [5] [2010]	207	264	40.2	<0.001	Significant
Present study	160	70			

[Table/Fig-8]: Statistical analysis of prevalence of benign and malignant eyelid lesions in various studies.

Studies	Males	Females	Chi-square value	p-value	Level of significance (p<0.05)
Paul S et al., [4] [2011]	402	453	8.44	<0.01	Significant
Coroi MC et al., [5] [2010]	259	212	0.498	>0.1	Not significant
Present study	133	97			

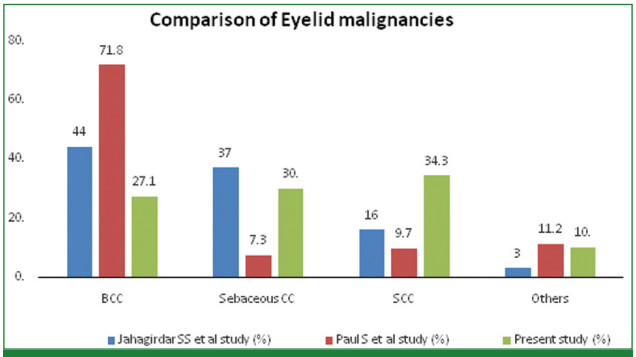
[Table/Fig-9]: Statistical analysis of prevalence of eyelid lesions in relation to sex amongst various studies.

Studies	Benign	Malignant
Paul S et al., [4] [2011]	75.9%	24.1%
Coroi MC et al., [5] [2010]	44%	56%
Obata H et al., [8] [2005]	73%	27%
Abdi U et al., [9] [1996]	58.90%	41.41%
Tesluk GC et al., [10] [1985]	79%	21%
Present Study	69.56%	30.44%

[Table/Fig-10]: Comparison of benign and malignant eyelid lesions in different studies.

Studies	Most common Benign lesion	Most common Malignant lesion
Paul S et al., [4] [2011]	Seborrheic keratosis (19.7%)	Basal cell carcinoma (71.8%)
Coroi MC et al., [5] [2010]	Squamous papilloma	Basal cell carcinoma
Obata H et al., [8] [2005]	Intradermal nevus (21.3%)	Sebaceous carcinoma (15%)
Abdi U et al., [9] [1996]	Vascular tumour (21.3%)	Basal cell carcinoma (38.8%)
Tesluk GC et al., [10] [1985]	Chalazion	Basal cell carcinoma (14.3%)
Farhat F et al., [11] [2010]	Dermoid cyst	-
Chauhan SC et al., [12] [2012]	Dermoid cyst	-
Present study	Nevus (12.17%)	Squamous cell carcinoma (10.43%)

[Table/Fig-11]: Comparison of most common benign and malignant eyelid lesions.



[Table/Fig-12]: Comparison of proportions of different malignant eyelid lesions in various studies [4,13].

all malignant tumours while in the studies undertaken by Jahagirdar SS et al., [13] and Tesluk GC et al., [10], BCC was the commonest one.

According to the study of Pe'er J, benign epithelial lesions, cystic lesions, and benign melanocytic lesions were very common in Israel. The most common malignant eyelid tumours were BCC in Caucasians and sebaceous gland carcinoma in Asians[14]. In the study of Gupta P et al., sebaceous gland carcinoma was more common in North India as compared to BCC and SCC [15].

LIMITATION

In the cases for retrospective study, the patients in whom the reviewed slide diagnosis differed from the earlier given diagnosis were not included in the study.

CONCLUSION

The epidemiology of eyelid lesions in this study population was different from populations of similar other studies. This difference in the prevalence of eyelid lesions amongst males and females and predominance of benign lesions compared to malignant was found to be statistically significant.

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